

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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JPN

Applicant: Paul Shirley et al.

Title: SPINDLE CHUCK CLEANER

Docket No.: 303.774US2

Serial No.: 10/777,957

Filed: February 13, 2004

Due Date: June 18, 2006 (Sunday)

Examiner: Bibi Sharidan Carrillo

Group Art Unit: 1746

**MS Appeal Brief - Patents**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

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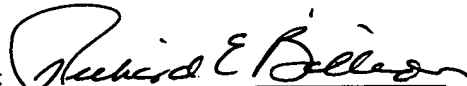
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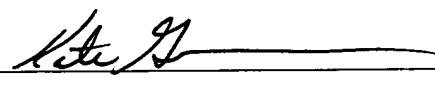
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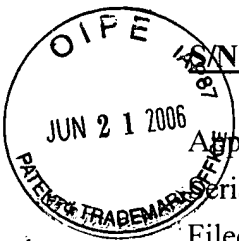
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(GENERAL)



S/N 10/777,957

PATENT

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**REPLY BRIEF UNDER 37 CFR § 41.41**

Mail Stop Appeal Brief - Patents  
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P.O. Box 1450  
Alexandria, VA 22313-1450

This Reply Brief is filed in response to the Examiner's Answer, mailed April 18, 2004, and supplements the Appeal Brief filed by the Applicant on February 6, 2006.

Please charge any required additional fees or credit overpayment to Deposit Account 19-0743.

**Reply to Examiner's Answer (9) Grounds of Rejection**

In the original Appeal Brief, the Examiner pointed out several matters that needed correcting. The Examiner correctly noted several typographical errors and the fact that the inventor name on the reference relied on changed from "Shuji" to Akune. This was due to a typographical error on the Abstract for the JP document. This was found by the Examiner in the translation of JO 10-294261 (see underlined portion of page 4 of the Examiner's Reply dated 4/18/2006). As a result, the arguments set forth in the original Appeal Brief that refer to the Shuji reference should refer to the Akune reference.

The Appellant also incorrectly referred to the Kipp reference in one paragraph of an argument rather than the Akune/Shuji reference (see the first paragraph on page 10 of the Appeal Brief). This has been corrected in this reply (see 10 a below).

Appellant will provide an amended or "new" Appeal Brief with the typographical errors, the name change from "Shuji" to Akune, and the incorrect reference to the Kipp reference fixed if the Board reviewing these proceedings would feel it helpful and request it.

There were no new Grounds of Rejection set forth by the Examiner. The Grounds of Rejection with the name change from "Shuji" to Akune were set forth in paragraphs 4-6 of the Examiner's Answer.

**Reply to Examiner's Response to Argument (10)**

On pages 6 – 10 of the Examiner's Answer, the Examiner responded to the Appellant's arguments set forth in the appeal brief filed 2/8/2006. The Examiner set forth responses in paragraphs having letter designations. In this reply, comments and arguments to the Examiner's Response to Argument are set forth using the same letter designations.

**Remarks regarding Examiner's Answer paragraph a)**

a) On page 10, lines 3-9 of the Appeal Brief the Appellant refers to the Kipp reference. This is a typographical error. The argument should refer to the Akune reference. A corrected version of the paragraph on page 10, lines 3-9 of the Appeal Brief is set forth below.

The rejection of each of the claims 34-39 and 55-62 is improper since the Examiner fails to make a proper *prima facie* case of obviousness. Appellant argues that the rejection of each of these claims is improper since the ~~Kipp~~ Akune reference fails to teach or suggest all the claim limitations. In the alternative, Appellant argues that the rejection under 35 U.S.C. § 103, citing the single reference issued to ~~Kipp~~ Akune, is improper since it fails to make out a proper *prima facie* case of obviousness. One of the requirements of a *prima facie* case of obviousness is that the prior art reference must teach or suggest all the claim limitations. The ~~Kipp~~ Akune reference fails to teach many of the recited elements, as admitted by the Examiner in the various Office Actions.

**Remarks regarding Examiner's Answer paragraphs b) , c), and d)**

Paragraphs b), c) and d) deal with the Examiner's Answer to arguments that the skilled artisan would not look to the Akune reference. In paragraph b) the Examiner seems to indicate that the overall "desire to remove contaminants" is a reason that can be used to support any modification or combination. The Akune reference works in an opposite manner from the invention as claimed, and introduces a reactive cleaning solvent into a clean environment. In other words, to clean the spin chuck, Akune jets off the contaminants of the spin chuck. According to the translation of Akune, the "...resist spreader...is equipped with a washing head part having a brush for washing the substrate holder and a jet port for jetting a washing solution and a gas..." (see paragraph 12 of the Akune translation). The claimed invention vacuums the contaminants from the clean environment through the cleaning head assembly. Akune works in exactly the opposite way. It jets off the spin chuck or support with a reactive cleaning solution that can potentially contaminate the clean environment and then supposedly removes the cleaning solution with nitrogen gas. Again, one of ordinary skill in vacuuming contaminants off a substrate would not look to a device which works in exactly the opposite way.

In addition, the claimed device operates in a clean environment. One of ordinary skill

designing the invention would take this into account and would minimize or remove steps that could introduce contaminants, such as a reactive cleaning fluid. The Examiner even admits that “[a]ny cleaning solution applied to the substrate surface introduces possibly a level of contamination onto the substrate surface due to certain factors such as the level of impurity present in cleaning solution.”

Akune seems to be designed for cleaning off the chuck yet seems to disregard operating in a clean environment. The clean environment is not in the claims but is important in determining what one of ordinary skill in the art would look to while designing a semiconductor fabrication device, which of course, must be as clean as possible to increase the yield percentages.

Appellant does not accept the Examiner’s reasons for the combination. The suggestion or motivation to modify the reference or to combine reference teachings, do not appear to be in the references themselves or in the knowledge generally available to one of ordinary skill in the art. It appears that the Examiner is using the claimed invention as a roadmap for combining the references. This, of course, is impermissible.

**Remarks regarding Examiner’s Answer paragraph e)**

Appellant contends that the modification of Akune with the Maeda reference would destroy the primary reference. Applicant continues to feel that the modification of Akune with the Maeda reference would destroy the primary reference were the vacuum device of Maeda were substituted for the jet ports as suggested by Appellant, or whether the additional vacuum ports of Maeda are added to the cleaning device of Akune as suggested by the Examiner. In semiconductor fabrication or any manufacturing situation, down time from manufacturing is minimized to maximize the number of products that can be made in a given amount of time and thereby maximize profits for the manufacturer. If the vacuum ports are used in cleaning the spin chuck or support, the cleaning process now includes additional time consuming steps. In addition to jetting the support with cleaning fluid, and drying with nitrogen, the chuck cleaning process also includes vacuuming. This not only adds time but also complexity to the cleaning apparatus. The Akune reference states as one of the problems to be solved by the invention “...to provide a resist spreader in which the operability decrease due to washing of the spin chuck for

vacuum-chucking a semiconductor wafer is suppressed.” (See paragraph 11 of the Akune translation). Thus, combining Akune with Maeda would lengthen the cleaning process which contradicts one of the stated problems to be solved by the Akune reference.

**Remarks regarding Examiner’s Answer paragraphs f)**

The Examiner contradicts the Appellant’s contention that the cleaning process of Akune (jetting cleaning solution and nitrogen) would interfere with the vacuum cleaning of Maeda. Appellant contends these two cleaning processes are conducted simultaneously. The Examiner contends that the cleaning processes of Akune and Maeda would occur serially. Even if this were a proper interpretation, Applicant continues to feel that the modification of Akune with the Maeda reference would destroy the primary reference. Operating the device to clean using the Akune invention and then clean using the Maeda reference increases the cleaning time. This contradicts the one of the problems to be solved by the Akune invention which “...to provide a resist spreader in which the operability decrease due to washing of the spin chuck for vacuum-chucking a semiconductor wafer is suppressed.” (See paragraph 11 of the Akune translation).

The points made above under the subheading **Remarks regarding Examiner’s Answer paragraphs e)** are equally applicable here. In fact, the argument set forth by the Examiner shows that the Examiner is proposing a lengthened cleaning process with the combination of Akune and Maeda.

**Remarks regarding Examiner’s Answer paragraphs g)**

The Examiner is correct in that the claims are directed to cleaning a support. The substrate surface in a semiconductor fabrication device supports a wafer, or can be termed a wafer support. A gas manifold is not designed to support anything but its own structure and therefore is not a support of any sort. Therefore, Appellant continues to argue that one would not combine the teachings of Maeda with Akune since Maeda removes contaminants from an entirely different portion of the semiconductor fabrication apparatus—namely a gas manifold that is not designed as a support.

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**Remarks regarding Examiner's Answer paragraph h)**

The Examiner seems to contend that the combination of Akune and Maeda teaches all the elements of claim 55. The Appellant contends the Examiner's position is incorrect since, as argued above and in the Appeal Brief, one of ordinary skill in the art would not be disposed to combine the Akune and Maeda references as suggested by the Examiner.

**Remarks regarding Examiner's Answer paragraph i)**

The Examiner is correct. The subheading is a typographical error as the Examiner remarked.

**Remarks regarding Examiner's Answer paragraph j)**

The Examiner is correct. The subheading is a typographical error as the Examiner remarked.

**Remarks regarding Examiner's Answer paragraph k)**

Appellant notes that there are no new arguments presented with respect to claims 40-42.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6977 to facilitate prosecution of this application.

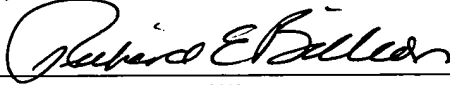
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Respectfully submitted,


PAUL SHIRLEY ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. Box 2938  
Minneapolis, MN 55402  
(612) 373-6977

Date 6/19/06 By   
Richard E. Billion  
Reg. No. 32,836

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